Indiana Department of Natural Resources
Division of Forestry

DRAFT

Resource Management Guide

Clark State Forest **Compartment: 7 Tract: 09**
Christine Martin **Date: 2/5/13**

Acres Commercial forest: 144
Acres Noncommercial Forest: 0
Acres Permanent Openings: 0
Acres Other: 0

Basal Area ≥ 14 inches DBH: 63
Basal Area < 14 inches DBH: 32.7
Basal Area Culls: 1.4
Total Basal Area: 97

Acres Total: 144
Stocking Level : Fully Stocked (88%)

Number Trees/Acre: 236

Species	Harvest	Leave	Total
Black Cherry		1490	1490
Mockernut Hickory		4560	4560
Sweetgum		4950	4950
Scarlet Oak		5110	5110
Shagbark Hickory		5600	5600
Virginia Pine	4320	2620	6940
American Sycamore		6990	6990
Chestnut Oak		7700	7700
White Ash	9860	1490	11350
Red Maple	11530	2620	14150
Northern Red Oak	3760	11600	15360
Black Oak	6510	14050	20560
Pignut Hickory		29290	29290
Sugar Maple	16490	15460	31950
Yellow Poplar	9310	55420	64730
Eastern White Pine	53600	60960	114560
White Oak	158060	473810	631870
Totals	273440	703720	977160
Totals/Acre	1898	4886	6785

Location

This tract is located in Clark county Indiana, Military Grant # 282.

General Description

In total this tract of land comprises 144 acres. There are five different types in this tract. The largest is the oak-hickory which is 116 acres. The mixed hardwoods and the white pine areas are the same size with 9 acres. The Virginia pine is 6 acres and the yellow poplar is 4.

History

This tract had a harvest in 1986. There was an inventory preformed in 1987. This inventory shows that there 1,742 bd.ft. per acre. There was a total square footage of basal area of 57. This tract was harvested with tract 708

In 1988 were tree plantings which occurred in three different locations on tract 708 and 709. There were two areas close to the main road one was in tract 709 (2acres) and the other one in 708 (5 acres). These areas looked to be across the intermittent stream from each other in the north end on the tracts. There was red oak and cherry planted in these locations. There was a third area of approximately 5 acres located at the end of the firelane in 708. This planting was of red oak and it was located close to the boundary line.

Landscape Context

This tract is mainly comprised of an east facing slope with 2 main ridges. There are many ridge fingers to these slopes therefore all the slope aspects are represented in this tract. This tract is relatively flat compared to the rest of Clark State Forest. There is about 70ft elevation change between the bottom of the ridge top and the bottom of the hill.

Topography, Geology, and Hydrology

There is an intermittent stream called sheep's branch that comprises the eastern boundary of this tract. The intermittent stream of sheep's branch drains into wolfs run which is a perennial stream.

Soils

Beanblosson Silt Loam(BcrAW) or Wakeland Silt (WaaAH)

The Wakeland series consists of very deep, somewhat poorly drained soils that formed in silty alluvium. These soils are on flood plains and flood-plain steps. Mean annual temperature is about 54 degrees F, and the mean annual precipitation is about 42 inches. The surface horizon is a plowed horizon with a dark grayish brown silt loam. After this horizon the rest of the profile is comprised of substratum. The substratum is mainly a grayish brown silt loam. The end of the profile is at 60 inches.

Degree Slope: 0-2%
Site Index: 80
Growth Range Potential: 342

Coolville (ComC)
The Coolville series consists of moderately well drained soils with amoderat available water capacity. These soils are comprised of Loess with a clayey residuum over shale and siltstone. The first Horizon is a silt loam which is 8 inches thick. The next horizon is 8-21inches thick and is comprised of a silty clay loam. At 21-37 soils is a silty clay. At 37-44inches it is a parachannery silty clay loam. At 44-60 inches it is bedrock. The mean annual precipitation is 40-46inches. The mean annual temperature is 52-57 degrees F.
Degree Slope: 6-12%
Land capability: 3e
Management concerns: None

Deam Silty Clay Loam (DbR)
This soil series is formed from the residuum of shale. These soils are moderately deep, well drained soils found on hills. The mean annual temperature is 52-57 degrees F. The mean annual precipitation is 40-46 inches. The surface horizon is a silty clay loam which grades into more the further in the horizon. In the Bt2 horizon there starts to be some parachanery silty clay showing up in the profile. The rest of the profile gets increasingly channery until bedrock.
Degree slope: 15-55%
Available water capacity: low
Permeability: slow to very slow

Weddel silt loam (WeB2)
The weddel series consist of soils that were formed in loess with the underlying paleosol till and residuum of soft shale. These soils are found on backslopes, shoulders and summits of till plains. These soils tend to have fragic properties. The mean annual precipitation is 43 inches and the mean annual temperature is 54 degrees Fahrenheit. The profile starts out as a silt loam. The subsoils is a silty clay loam. The depth to the fragipan is 26 inches. Underneath the fragipan is a silty clam loam. The substratum is a parachannery silty clay. The bedrock forms at 75-80 inches.
Degree slope: 2-12%
Drainage class: moderately well drained
Land capability: 2e

Wilbur Silt Loam (WokAW)
These soils form on flood plains in silty alluvium. The mean annual precipitation is 40-46 inches and the mean annual temperature is 52-57 degrees Fahrenheit. The available water capacity is Very high for the Wilbur series. In a typical profile these soils have a plow

layer which is about 7 inches deep. The subsoil is mainly a silt loam with weak soils structure. The substatum is a silt loam, massive.
Degree slope: 0-2 %
Flooding: occasional
Land capability: 2w

Access

There is great access to this tract. This western boundary of this tract is Forestry road. There is also a horsetrail loop that traverses the north end of this tract and also runs into 708. The Main road that runs through Clark State Forest borders the northern section of this tract.

Boundary

The majority of this tract is surrounded by Clark State forest. Forestry road comprises the western boundary. The northern boundary is the main road that runs through Clark SF. The eastern boundary is Sheep's Branch. This is an intermittent stream. The southern boundary is next to private property. There has been a survey in 1985 preformed by the state surveyor Frank Ballintyn. There are pipes and signs indicated where the boundary line is.

Despite all of this evidence the neighbors are still encroaching on us. In total the encroachment comes to a half acre. They are mowing part of the field and they claim they own 15ft into the woods. These are incorrect statements that will need to be resolved.

Wildlife and Communities

This tract is typical of the wildlife in Southern Indiana. There were found deer, squirrels, chipmunks, song birds, and some birds of prey, while inventorying.

Wildlife Habitat Feature Tract Summary

	Maintenance Level	Optimal Level	Inventory	Available Above Maintenance	Available Above Optimal
Legacy Trees *					
11"+ DBH	1296		4786	3490	
20"+ DBH	432		1231	799	
Snags (all species)					
5"+ DBH	576	1008	1211	635	203
9"+ DBH	432	864	393	-39	-471
19"+ DBH	72	144	68	-4	-76
Cavity Trees (all species)					

7"+ DBH	576	864	575	-1	-289
11"+ DBH	432	576	575	143	-1
19"+ DBH	72	144	167	95	23

*** Species Include:** AME, BIH, BLL, COT, GRA, REO, POO, REE, SHH, ZSH, SIM, SUM, WHA, WHO

There is room for improvement on the large snags in this tract. The reason may be that there are many pockets of small timber therefore the large trees are just not found on this tract. The only thing that could be done to mitigate these issues is to leave some of the bigger trees while marking this stand. These trees can then be girdled in the post harvest TSI. It also looks like there could be more cavities created. This would mean that instead of girdling the large trees in the TSI then we would leave them so the wildlife can live in them via cavities.

Indiana Bat

Timber harvest activities may have both positive and negative effects on the Indiana bat. While undetected but occupied roost trees could be cut during spring, summer or fall, the probability of disturbance or direct injury or death to bats is extremely small. Timber harvest could create conditions that are beneficial to Indiana bats. Roads and/or skid trails provide improved canopy foraging conditions by reducing clutter. Roosting habitat could also be improved by reducing clutter around roost trees. Edges of log landings and regeneration openings could provide roost trees with improved solar exposure, thus improving microclimate/thermal conditions for roosting areas. This would improve reproductive success and fitness, contributing to local population stability or increase. In cases of maternity trees this could provide conditions that increase growth and activity rates of young bats, leading to reduced time for parental care.

Suitable roost trees such as large diameter snags or live trees with loose or exfoliating bark will be retained in sufficient numbers to provide continuing roosting habitat for the Indiana bat.

A Natural Heritage Database review was obtained for this tract. If rare, threatened or endangered species were identified for this area, the activities prescribed in this guide will be conducted in a manner that will not threaten the viability of those species.

Invasive Species

There were many invasive plants found while inventorying this tract. There has been honeysuckle, multiflora rose, and bittersweet. These invasives are mainly coming in from the power line right of way which is next to the Virginia pine type.

There will be some post harvest TSI that will focus on the eradication of these species. There will need to be multiple entries with chemical to prevent the spread of these

species, especially once the stand is opened up and more sunlight is hitting the forest floor.

Recreation

This tract is used highly for recreation. Frankie Lake is found near these tracts. People fish this lake frequently in the summer. People also use this tract to forage for mushrooms and nature watching.

There should not be any hunting in this tract because it is contained within the safety zone.

There is a short horsetrail that runs through this tract and tract 708. This horsetrail will be closed throughout the duration of the timber harvest. There are many other horsetrails for the public to use, that this should not impact recreation.

Cultural

Cultural resources may be present on this tract but their location is protected. Adverse impacts to significant cultural resources will be avoided during any management or construction activities.

Summary Tract Silvicultural Prescription and Proposed Activities

OAK-HICKORY

There are approximately 116 acres in this stratum. The main species is white oak. The basal area per square foot is 92, which means there is approximately 16 square feet of basal area that can be removed. This will take the stratum from 80% fully stocked to 65% fully stocked. This will leave the stratum in a more manageable position. There are approximately 830,340 Doyle board feet found in this stratum and 174,510 of that is harvestable which is a little less than a quarter of the total volume.

A large component of this area is white oak. The overall size of these trees is mainly medium sawtimber to large sawtimber. These trees are fairly healthy with good crowns and a decent form class. There are however many trees that can come out for health reasons. There were some areas where there was heavy die back from the crowns. These trees will need to be taken out to promote growth on the healthier trees still growing. There also were a lot of pockets where it was evident that the trees were stressed due to over crowding. These areas desperately need thinning in order to decrease the stress levels and to retain some of the trees. Without this thinning is highly possible that all the trees will get too stressed and will not be able to recover.

The regeneration is mainly red maple and American beech. There is not much sunlight hitting the forest floor to support oak regeneration. With the shade tolerant species in the understory it exacerbates the oak regeneration problem. There should be some large openings created with the harvest to increase the sunlight hitting the forest floor. There will need to be follow-up timber stand improvement to help get rid of the maples and

beeches growing in the newly created openings. There will still be many other tree species in these openings but there should be some new oak sprouts.

This stratum can use an improvement harvest. The poor quality, stunted, and stressed trees should be thinned out to make room for the young trees to take over. These young trees will improve vigor and overall health. There also needs to be some larger openings in order to facilitate oak regeneration. These openings should be created in areas with large groups of stunted or defected trees are found. There also have been areas found with a large amount of stressed white oak. Areas that are good candidates for openings would have a large number of trees that would provide coppice regeneration, or have strong, established oak regeneration.

This stratum would also be a great candidate for a prescribed burn. There is a lot of oak in the overstory but not a lot of oak regeneration. The burn would kill a lot of the understory regeneration, and the vegetation on the ground thereby increasing the amount of sunlight that is hitting the forest floor. With this increased sunlight there should be some new growth of oak that is starting to grow. These oaks would be already present as seedlings or from the new acorns that are falling to the ground from the overstory after the burn. After a couple years of letting the new regeneration grow there will need to be another prescribed burn. The forest vegetation and the competing regeneration from other tree species will grow back and will start competing with the oak regeneration once again. This 2nd burn will release the newly grown oak regeneration from the competition thereby cementing it in the understory so it can eventually grow into the overstory. The oaks are very tolerant to burns and spring back faster than any other species regeneration therefore prescribed burns helps the most when it comes to getting oak regeneration in an area.

This understory removal can also be done without burning but will require mechanical Timber Stand Improvement (TSI) to complete. The Timber Stand Improvement may prove to be more costly and the cost benefit ratios should be taken into account to know if it is better to burn or to do conventional TSI in this area.

WHITE PINE

This stratum is found to the north and west of this tract along the ridgetops. The main tree species is white pine. There are approximately 9 acres in this area. There is 147 square feet of basal area. There is approximately 55 square feet of basal area that should be removed from this type. This will take the stocking from 130% to 80%. This will take it from overstocked to fully stocked. There is approximately 8,092 Doyle board feet that can be harvested within this type.

This pine has been previously planted. These pines are packed together. There is a broad range of diameters. This means that some of the trees have been stunted in their growth. The trees that have been stunted will likely never recover and will likely never grow much bigger than they already are. These trees will be the first to die when disease strikes. These stunted pines will need to be taken out in order to improve the overall health. These stunted trees are no longer an asset and need to be removed in order to have

healthy white pine. It is more prudent to invest in the trees that have show superior genetics and are still vigorously growing.

There are a lot of red maple intermixed within the pine. These maples are small to medium saw timber in size. These maples started growing when one of the larger white pines fell creating a canopy gap so sunlight could make it to the forest floor. There is a monoculture of white pine and red maple in this section of the tract.

This stratum definitely needs to have an improvement harvest. A thinning will take out the stunted white pines and create healthier white pine overall. There should also be some small canopy gaps or regeneration openings created to help the hardwood regeneration to grow. The pines were planted and they are not native to Indiana. There should be a transition from white pine to native hardwoods.

This area of white pine could also be completely removed from the stand. This will create a 9 acre regeneration opening thereby letting the shade intolerant trees grow where they would not have had a chance to grow under more shaded conditions. By opening this up it would help facilitate the conversion from white pine to central hardwoods.

This area is also located along the main road that runs through the park area. The aesthetics of these pines should be considered when making plans with what to do with them in the harvest. It may be prudent to heavily thin the stratum out rather than create a clearing. This decision will be left up to the marking forester.

VIRGINIA PINE

This stratum is 6 acres in size. There is a total of 116 square feet of basal area. There is a total of 8,000 board feet.

This area is mainly populated by pole size pine and poplar. This area was planted in Virginia pine and the yellow poplars took advantage where possible. These trees are all stunted and need to be taken out in order to convert to healthy central hardwoods. The majority of the pines should be removed and the dying and stunted poplars should be removed as well.

There are many invasive found in this area. There has been honeysuckle, multiflora rose, and bittersweet. These invasive are mainly coming in from the power line right of way. These invasive species will need to be monitored before and after the sale to make sure they do not get out of control.

YELLOW POPLAR

This stratum is about 4 acres in size. This area is almost entirely comprised of yellow poplar. There is 80 square feet of basal area in this type. This stratum can be cut down to 70 square feet of basal area. This stratum would be cut from 73% fully stocked to 66% fully stocked. There is a total of 18,590 board feet.

The main regeneration in this area is American beech. The American beeches are shading out any other regeneration. There needs to be some smaller group selection openings within this area in order to help facilitate a mix of regeneration. There are many stressed poplars. These stressed areas would be perfect candidates for a small canopy gap to help the sunlight reach the forest floor.

MIXEDHARDWOOD

This stratum is mainly found in the drainage. There are approximately 9 acres found in this type. There is 98 square feet of basal area. There is approximately 15 square feet of basal area that can be removed in the harvest. That would take the area from 89% stocking to a more manageable 75% stocking. There is 42,420 total Doyle board feet in this type. There is 6,550 Doyle board feet that is harvestable; which is a little less than a fifth of the total volume.

The main tree species are yellow poplar and white oak. The diameters of the trees are in the range of small to medium sawtimber. There is a lot of small 2-6" sugar maple and American beech trees. There will need to be some small canopy gaps incorporated in the harvest. These small canopy gaps will help establish these small trees and let them grow to the canopy. If they remain in the understory for too long the small diameter trees will get stunted.

Proposed Activities Listing

2013- Resolve encroachment issues
2013-Timber Sale
2014- Timber stand improvement and invasive control/ prescribed burn
2019-precribed burn
2023- re evaluate for next managements cycle.

To submit a comment on this document, click on the following link:
http://www.in.gov/surveytool/public/survey.php?name=dnr_forestry

You must indicate the State Forest Name, Compartment Number and Tract Number in the "Subject or file reference" line to ensure that your comment receives appropriate consideration. Comments received within 30 days of posting will be considered.

Note: Some graphics may distort due to compression.